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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SUCH, MATTHEW W

ART UNIT	PAPER NUMBER
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2891

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/811,928	Applicant(s) TATEISHI, TOMOMI	
	Examiner Matthew W. Such	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-13,15-19 and 21-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 9-13, 15-19 and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 March 2008 has been entered.

Claim Objections

2. Claims 1, 7, 13 and 19 are objected to because of the following informalities: the phrase "said electrode" should read "said first electrode" in order to maintain consistent antecedent basis throughout the claims. Appropriate correction is required.

3. Claims 5-6, 11-12, 17-18 and 23-24 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Specifically, the phrase "wherein a flat layer is formed on at least on of said first and second substrates" in claims 5, 11, 17 and 23 fails to further limit the scope of claims 1, 7, 13 and 19, respectively. The language of "wherein a flat layer" is not a required element limiting the scope of the previous claim because the claim does not further comprise the element of a flat layer. See MPEP § 2106 II C and MPEP § 2111.04. Applicant is required to cancel the claim(s), or

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amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 7, 13 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "said organic layer has a glass transition temperature of from 40 °C to the transfer temperature + 40 °C". However, the claim fails to establish what "the transfer temperature" is, and as such is undefined. Since "the transfer temperature" is undefined, then "the transfer temperature + 40 °C" is also undefined.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. In so far as definite, claims 1, 3-7, 9-13, 15-19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akai ('021) in view of Mueller ('741) in view of Nakaya ('176).

a. Regarding claims 1, 3, 7, 9, 13, 15, 19, 21 and 25-26, the language of "such that said organic layer of said transfer material faces said [first] electrode", "to form a laminate" and "so that said organic layer is transferred onto said first substrate", the examiner notes that the recitations of "such that", "to form" and "so that" merely describe intended outcomes of the method steps of "applying heat and/or pressure" and "peeling said support", respectively. Language expressing the intended use/outcome/result of a specific step in a method claim does not narrow scope of the method claim past the specific recited step. See MPEP § 2111.04.

Akai teaches a method of producing an organic electroluminescent device by using a transfer material (Element 21) having an organic layer, such as Alq3 or TPD or others (Element 3, 3a, 3b, 3c, 103; Para. 0052-0055, 0093-0096) on a plate support (Element 24, 204) with a pattern. The manner in which the claim is written does not limit the pattern of the plate, so any arbitrary shape meets the claim. The transfer material is superimposed (Figs. 3d and 6) on a first substrate (Element 1, 101) having a first electrode (Element 2, 102) with the organic layer facing the first electrode (Figs. 3d and 6). Heat (Element 25, 205) is applied forming a laminate (Para. 0119-0120, 0141). The plate support is peeled away transferring the organic layer onto the first substrate via the first electrode (Figs. 4e and 7; Para. 0109, for example). The examiner notes that glass

transition temperature is merely a material property of the organic materials disclosed by Akai and since the claim fails to limit what the glass transition temperature is, then anything meets the claim.

Akai teaches that a second electrode (Element 4, 5, 105) is formed after transfer of the organic layer onto the first substrate via the first electrode (Fig. 4f and 7; Para. 0115-0125) but does not teach that the second electrode is on a second substrate which are together laminated on the organic layer on the first substrate.

Mueller teaches a first substrate (Element 16) having a first electrode (Element 17) with an organic layer (Element 14) formed thereon via the first electrode (Fig. 1A). A second substrate (Element 11) having a second electrode (Element 12) formed thereon is together laminated on the organic layer on the first substrate (Figs. 1A-1B; Abstract, for example; so-called "flip-chip" approach). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the second electrode of Akai by forming a second substrate with the second electrode thereon and then laminating to the organic layer on the first substrate, as taught by Mueller. One would have been motivated to do so since Mueller teaches that this formation method offers advantages such as separating incompatible processing steps for the second electrode and organic layer (Mueller Col. 4, Lines 5-11). Furthermore, each separate process can be independently optimized and each part can be tested separately prior to lamination to ensure high manufacturing yield (Mueller Col. 4, lines 5-11).

Akai does not teach that the first substrate and second substrate each have a maximum surface roughness R_{max} of 0.0001-25%, based on the ratio of the surface roughness to the thickness of the organic layer.

Nakaya teaches forming substrates with electrodes for OLED devices having a maximum surface roughness R_{max} of the first substrate of, for example, 2 nm (Col. 13, Lines 45-46, for example). It would have been obvious to one of ordinary skill in the art at the time the invention was made to produce the first substrate with a maximum surface roughness of 2 nm, for example, since the smooth substrate OLED devices have lower leakage currents and stable emission of light without the presence of dark spots (Nakaya Abstract; Col. 1, Lines 57-65; Col. 15, Lines 1-5, for example). Since Akai teaches that the organic layer is 10 nm to 1 micron thick (Para. 0091) and Nakaya teaches that R_{max} is 2 nm, the ratio is 0.2-20% for each substrate. It has been held that where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

b. Regarding claims 4, 10, 16 and 22, Akai teaches that the first substrate is silicon (thermal expansion coefficient of 2.6 ppm/°C at 20 °C) or glass (linear thermal expansion coefficient of 8.5 ppm/°C at 20 °C), for example (Para. 0047, 0101). The linear thermal expansion coefficient is material properties. Further, the claim also fails to identify which temperature the linear thermal expansion coefficient is measured at, so any temperature can be arbitrarily chosen.

c. Regarding claims 5-6, 11-12, 17-18 and 23-24, the examiner notes that the manner in which the claims are written do not limit the scope of the previous claims (see ***Claim Objections***, above). Nevertheless, Akai teaches a planarization layer (Element 10) as a "flat layer" on the first substrate, for example. Although Akai is silent on the material for the planarization layer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a UV curable planarization material such as polyimide in order to form a flattening layer over the TFT (Elements 6, 7, 8) and defining a bank for each light emitting pixel. UV curable materials are notoriously well-known for these purposes. It has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

d. Further regarding claims 13, 15-19 and 21-26, the entirety of the claim language is directed towards the process of making an organic electroluminescent device. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by

process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference. As such, the language of claims 13, 15-19 and 21-26 only requires a first substrate having Rmax claimed, a first electrode on the first substrate, an organic layer the first electrode, a second electrode on the organic layer, and a second substrate on the second electrode, which does not distinguish the invention from Akai in view of Mueller in view of Nakaya, who teaches the structure as claimed and shown above.

8. In so far as definite, claims 13, 15-19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller (‘741) in view of Nakaya (‘176).

The examiner notes that the entirety of the claim language is directed towards the process of making an organic electroluminescent device. It is well settled that “product by process” limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. In re *Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, In re *Brown*, 173 USPQ 685; In re *Luck*, 177 USPQ 523; In re *Fessmann*, 180 USPQ 324; In re *Avery*, 186 USPQ 161; In re *Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re *Marosi et al.*, 218 USPQ 289; and particularly In re *Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a

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new method is not patentable as a product, whether claimed in “product by process” claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference. As such, the language of claims 13, 15-19 and 21-26 only requires a first substrate having R_{max} claimed, a first electrode on the first substrate, an organic layer the first electrode, a second electrode on the organic layer, and a second substrate on the second electrode, which does not distinguish the invention from Mueller in view of Nakaya, who teaches the structure as claimed (explanation follows):

e. Regarding claims 13, 15, 19, 21 and 25-26, Mueller teaches a first substrate (Element 16, Fig. 1B), a first electrode of ITO (Element 17, Fig. 1B) on the first substrate, an organic layer of Alq3 (Element 14, Fig. 1B) on the first electrode, a second electrode (Element 12, Fig. 1B) on the organic layer, and a second substrate (Element 11, Fig. 1B) on the second electrode (Col. 6, Lines 45-52, for example). The examiner notes that glass transition temperature is merely a material property of the organic materials disclosed by Mueller and since the claim fails to limit what the glass transition temperature is, then anything meets the claim.

Mueller does not teach that the first substrate and second substrate each have a maximum surface roughness R_{max} of 0.0001-25%, based on the ratio of the surface roughness to the thickness of the organic layer.

Nakaya teaches forming substrates with electrodes for OLED devices having a maximum surface roughness R_{max} of the first substrate of, for example, 2 nm (Col. 13, Lines 45-46, for example). It would have been obvious to one of ordinary skill in the art

at the time the invention was made to produce the first substrate with a maximum surface roughness of 2 nm, for example, since the smooth substrate OLED devices have lower leakage currents and stable emission of light without the presence of dark spots (Nakaya Abstract; Col. 1, Lines 57-65; Col. 15, Lines 1-5, for example). Since Mueller teaches that the organic layer is 10 nm to 2 microns thick (Col. 6, Lines 45-52) and Nakaya teaches that R_{max} is 2 nm, the ratio is 0.1-20% for each substrate. It has been held that where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

f. Regarding claims 16 and 22, Akai teaches that the first substrate is glass (linear thermal expansion coefficient of 8.5 ppm/°C at 20 °C) and the second substrate is silicon (thermal expansion coefficient of 2.6 ppm/°C at 20 °C) or, for example (Col. 6, Lines 45-52). The linear thermal expansion coefficient is material properties. Further, the claim also fails to identify which temperature the linear thermal expansion coefficient is measured at, so any temperature can be arbitrarily chosen.

g. Regarding claims 17-18 and 23-24, the examiner notes that the manner in which the claims are written do not limit the scope of the previous claims (see ***Claim Objections***, above).

Response to Arguments

9. Applicant's arguments with respect to claims 1, 3-7, 9-13, 15-19 and 21-26 have been considered but are moot in view of the new ground(s) of rejection.

Related Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- i. Akai ('614) teaches methods of forming electroluminescent devices by transferring organic layers from a donor substrate to a first substrate;
- ii. Kim (Solid-State Electronics, Vol. 48) and Jian (Journal of Applied Physics, Vol. 101) each teach the glass transition temperatures of organic materials such as Alq3 and TPD, for example.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew W. Such whose telephone number is (571) 272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bradley W. Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew W. Such
Examiner, Art Unit 2891

MWS
6/7/08

/Douglas M Menz/

Primary Examiner, Art Unit 2891

6/9/08